Assumption Parish
Operational Situation Summary

- Emergency Management:
  - Parish Emergency Declared – 19 June 2012
    - Extended 30 days on 19 July 2012
    - Extended 30 days on 17 August 2012
    - Extended 30 days on 14 September 2012
    - Extended 30 days on 12 October 2012
  - State Emergency Declared – 3 August 2012
  - LA Hwy 70 Open for traffic
  - Mandatory Evacuation still in effect
  - Security plans in place to secure slurry area
  - Parish continues blog to inform residents
  - Texas Brine issuing financial assistance for residents – St. Joseph the Worker Church Hall in Pierre Part - HOTLINE 1-877-281-7311
  - Facilitating the askGOHSEP@la.gov for questions
  - Next public briefing to be determined
  - Isaac Recovery in progress

****All changes are depicted in "red" on each slide**

As of 5 November2012

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Assumption Parish
Operational Situation Summary

- Public Safety:
  - LSP providing air craft support
  - LSP providing HAZMAT support to parish as needed
  - LDWF providing air boat support to parish as needed
  - No market or recreational hunting or fishing in restricted area
  - LSA Command Post on site

As of 5 November 2012

Assumption Parish
Operational Situation Summary

- **Department of Natural Resources:**
  - All pipelines shut in and empty; confirmed pipelines not source of bubbles
  - Investigation of plugged and abandoned oil and gas wells in area performed
  - Slurry area developed on 3 Aug 2012
  - Slurry area 200'northwest of Texas Brine (OXY #3) pad
  - Ordered Texas Brine to drill investigatory well
  - Office of Conservation issues permit for well to be drilled
  - Slurry area approximately 600 feet in diameter
  - Hydrocarbons and salt water present at slurry area
  - Staff has reviewed 23 hydrocarbon storage and 36 brine cavern wells and associated cavern files which represents 100% of the cavern wells on the dome
  - Continuing source investigation and file reviews

As of 5 November 2012

Assumption Parish Operational Situation Summary

- **Department of Natural Resources (continued):**
  - EPA conducted over flight to detect gas and radiation via specialized imagery on Saturday, 25 August 2012–no significant detections–report posted to DNR website
  - Personnel on stand by to assist incident commander
  - Coordinating and providing information to science team
  - DNR provided 24/7 oversight of drilling operations starting 1800 hours on 8/17/12
  - Drilling Status: completed
  - Observation wellhead assembly installed on well
  - Snubbing unit moved off observation well site location
  - As of 1 October 2012, Texas Brine is moving to daylight operations
  - Ran pulse-neutron log, gauge tool (to determine depth of cavern), and sonar of cavern
  - Texas Brine supplied a split sample (solid material) to DNR (Shaw E&I)
  - Crosstex has discontinued entry of new product into their caverns and continues to move product from cavern 2 to cavern 1 or to market
  - Chevron has started the injection of water into their natural gas cavern in order to move natural gas out of their caverns
  - U.S. Department of Energy's Sandia National Lab has agreed to provide technical assistance through participation in our Science Work Group.

As of 5 November 2012

Assumption Parish Operational Situation Summary

- **Department of Natural Resources (continued)**:
  - Science team confirms Commissioner of Conservation's decision requiring investigatory well is appropriate action based on information available and also raises no concerns regarding the stability of the Crosstex Caverns
  - Natural gas detected at approximately 48' while installing geoprobe borehole -- observation well installed
  - On Friday, September 14, 2012, contractor encountered gas at 90' while drilling the water observation well---unable to complete as observation well so the wellbore was plugged and abandoned
  - Shaw E&I will be overseeing the evaluation & removal of natural gas from the aquifer
  - Commissioner of Conservation issued an Order directing all Dome operators to immediately begin work to assess the presence of natural gas in both the ground water aquifer and the salt dome cap rock beneath their operations; capture, vent or flare any natural gas that is encountered; and analyze any potential impacts to ground water in the Mississippi River Alluvial Aquifer
  - DNR has requested and received assistance in finding property owners to place geoprobes and/or vent wells
  - LSU completed seismic noise test on the Dugas-LeBlanc and Triche property
  - Shaw E&I finalized their initial plan of action for natural gas evaluation and removal from the ground water aquifer and presented it to incident command and Bayou Corne Community
  - Texas Brine completed tests on two water wells to determine the presence of natural gas
  - Shaw E&I's contractor has installed 18 observations wells (geoprobe boreholes) as of 10-15-12
  - Shaw E&I's contractor completed the installation of casing for 3 observation/relief wells (184' on ORW-1, 199' on ORW-2, & 200' on ORW-3)
  - Shaw E&I's contractor logged the active salt water disposal well located on Dugas-Leblanc property---no gas was found

As of 5 November 2012

Assumption Parish Operational Situation Summary

- **Department of Natural Resources (continued)**:

- PDK log of the ORW-1 detected 4 feet of free gas, well perforated
- PDK log of the ORW-2 detected 5 feet of free gas ---well perforated---shut in for 24 hours on 10-9-12
- PDK log of the ORW-3 detected no free gas in the alluvial aquifer on 10-9-12, well perforated
- Analytical results identified the hydrocarbon in the sink hole and cavern as formation hydrocarbon (crude oil)
- Based on isotopic signatures and other data the following have been eliminated as the probable sources for the gas:
    - Chevron natural gas cavern;
    - Acadian natural gas cavern;
    - Crosstex butane caverns; and
    - Residual gas from the 2003 Gulf South blowout.
- Probable source of gas and crude oil is from the oil and gas production zones that are the same elevation as the OXY GEISMAR NO. 3 cavern
- Dissolved gas found in Domestic water wells confirmed to be swamp gas (Brule St. Vincent)
- Bayou Drive bubbling site is confirmed to be swamp gas
- Commissioner of Conservation issued an Order dated 11 Oct 2012 to Texas Brine to take the following action:
    - Monitoring pressure in the failed cavern
    - Install monitoring wells in the Bayou Corne community to monitor water quality and pressures, as well as elevation benchmarks within the community for subsidence monitoring
    - Install pressure monitor at wellhead of the cavern re-entry well, designed to provide real-time data to parish emergency response agencies of any rapid pressure change
    - Upgrade and expand seismic monitoring array to cover a wider area and include real-time data processing and interpretation of micro-seismic data, with seismic data reported in real-time to parish emergency response agencies
    - Install continuous water level monitoring station at the sinkhole
    - Collect and interpret geophysical data to determine the exact structure of the zone of failure and its impact on the surface and subsurface
    - Cease water production for the OXY No. 3 water well and begin use of this well for periodic water level determination and water quality sample and testing
    - Install observation/vent well in the vicinity of the Texas Brine core-hole well
- Shaw E&I collected data on 14 Oct 2012 to determine next steps in venting of the natural gas from the aquifer
- Working with DEQ to ensure integrity of the containment boom around the sink hole

As of 5 November 2012

Assumption Parish Operational Situation Summary

- **Department of Natural Resources (continued)**:

- Texas Brine conducted the following operations on their investigatory well:
  - Collected a total of 4274 bbls(cumulative total as of 5 November 2012) of hydrocarbons from the Oxy 3A Cavern.
  - Flared a total of 459 mcf of metered gas(cumulative total as of 5 November 2012)
  - Conducted sonar survey and ran a PDK log on 1 November 2012
- Shaw E&I collected gas and hydrocarbon samples for analysis from the Oxy 3A cavern
- Texas Brine contractor installed 14-inch observation/vent well – Perforated casing, 30 psi recorded as of 1 November 2012
- Shaw E&I performed a slug test on ORW-2 & 3 (18 Oct 2012)
- Shaw E&I's contractor completed driving casing at ORW- 4 location
- Shaw E&I completed collection of water samples from the shallow water Geoprobes (analytical results expected by 15 November).
- Flaring commenced 2 November, 2012 at the vent well located on Texas Brine's property.

As of 5 November 2012

Assumption Parish
Operational Situation Summary

- DHH / Office of Public Health
  - Section for Environmental Epidemiology and Toxicology
    - Air Monitoring Sample Data
      - SEET has received and is analyzing community ambient air sampled 9/28/2012-11/1/2012 (MultiRAE). SEET will issue a letter to the parish in reference to these findings once the review of the data has been completed.
      - SEET has received and is analyzing sample results for air at bubble sites collected 9/28/2012-11/1/2012 (MultiRAE). SEET will issue a letter to the parish in reference to these findings once the review of the data has been completed.
      - SEET has received and is analyzing air at area residences sampled 9/28/2012-10/13/2012 (MultiRAE). SEET will issue a letter to the parish in reference to these findings once the review of the data has been completed.

As of 5 November 2012

Assumption Parish
Operational Situation Summary

- DHH / Office of Public Health
  - Section for Environmental Epidemiology and Toxicology
    - Industrial Water Well Sampling Data
      - SEET has received and is analyzing industrial water well sampling data from 9/26/2012 and 10/2/2012. SEET will issue a letter to the parish in reference to these findings once the review of the data has been completed.

As of 5 November 2012

Assumption Parish
Operational Situation Summary

- DHH / Office of Public Health
  - Section for Environmental Epidemiology and Toxicology
    - Slurry Water Sampling Data
      - No new slurry data received during this operational period.

As of 5 November 2012

Assumption Parish
Operational Situation Summary

- DHH / Office of Public Health
  - Section for Environmental Epidemiology and Toxicology
    - Surface Water at Bubble Sites
      - No new surface water data received during this operational period.

As of 5 November 2012

Assumption Parish
Operational Situation Summary

- DHH / Office of Public Health
  - Safe Drinking Water
    - There were no activities scheduled during this operational period.

As of 5 November 2012

Assumption Parish
Operational Situation Summary

- Department of Environmental Quality
  - Air monitoring for VOC's continues with no dangerous levels detected off site (1000' away).
  - On going Water sampling/water quality monitoring in Bayou Corne and Grand Bayou indicates no water pollution associated with the incident to date. Elevated conductivity noted at "bubbling site" #5. Samples indicate probable ground water release from shallow aquifer to surface waters. Elevated conductivity is not causing surface water impairment. No elevated conductivity values have been encountered since week of September 6.
  - Water quality monitoring in Bayou Lafourche indicates no water pollution associated with the incident to date.
  - Outdoor Air monitoring has been conducted at 97 private properties with no dangerous readings to date.
  - Indoor air monitoring has been conducted at private properties with no dangerous readings to date. Private residence air monitoring is available for scheduling upon citizen completion of the Right of Entry form. Please call (225) 219-3015 to notify DEQ if you desire monitoring.
  - Collected hydrocarbon samples from slurry area for comparison to samples collected on 04 August 12. Results indicate petroleum hydrocarbons dominated by diesel range organics, same as samples collected on August 4. Shaw E&I has confirmed the hydrocarbon material to be unprocessed crude oil.
  - LDEQ Command Post on site. MAML on site collecting continuous data on methane/non-methane VOCs and H2S.

As of 7 November 2012

Assumption Parish
Operational Situation Summary

- Department of Environmental Quality (continued)
-
  - Canister samples collected at sites with slightly elevated VOCs indicate no toxic materials above background, but Tentatively Identified Compounds (TICs) showing additional natural gas compounds (e.g., butane, pentane, iso-butane).
  - DEQ personnel collecting air samples and conducting air monitoring using real-time monitoring equipment in the community and in the areas of bubbling in Bayou.
  - In conjunction with Assumption OEP and other state agencies, continue to monitor Texas Brine's efforts to conduct hydrocarbon removal from the sinkhole.
  - Provide oversight and review of Texas Brine's water quality monitoring efforts.
  - Oversee and review air monitoring at the Texas Brine facility using real-time monitoring instruments.
  - Continue to visually monitor conditions of the booms and general conditions of the slurry area from the well pad.
  - DEQ has engaged the Shaw group to conduct cause diagnostics including bi-weekly sampling of industrial wells and opportunistic sampling of bubble sites.
  - Fingerprint analysis of cavern hydrocarbon collected 23 Sep 2012. Results demonstrated that the product was unrefined crude.
  - As of 06 November, Texas Brine has removed 123 roll off boxes hydrocarbon contaminated debris.
  - As of 06 November, Texas Brine has removed approximately 1535 Barrels of hydrocarbons from the surface of the sinkhole.

As of 7 November 2012

Assumption Parish
Operational Situation Summary

- Department of Transportation and Development
  - Monitoring and surveying roadways and bridges in the area for ground movement
  - Developed a traffic contingency plan if needed
  - Establishing GPS monitoring system
  - Continuous monitoring stations are concentrated on Hwy 70 from the Bayou Corne bridge East to LA Hwy 996 to include a ½ mile stretch of LA Hwy 69 from the intersection of LA Hwy 70
  - LSU is currently performing elevation monitoring.
  - Documentation of Response efforts are available on WWW.Assumptionla.com\bayoucorne as of 10-08-12

As of 5 November 2012

Assumption Parish
Scientific Situation Summary

- USGS:
  - Source of seismic activity estimated between 200 and 600 meters deep
  - Continuing to monitor seismic activity at the six seismograph locations
  - USGS reported limited seismic activity---average of one tremor a day---direction NW of sinkhole and other side of the pipeline right-of-way---Dr. Horton stated the science behind the recent events does not suggest a heightened level of risk at this time.
  - USGS confirms no seismic activity in the area of the butane caverns
  - Representative of the science group discussed dome mechanics and surveys for investigatory well with representative of USGS and Sandia National Lab
  - In response to Texas Brine's assertion that region seismic activity caused their cavern to be compromised, USGS stated (on 25 Sept. 2012) that it is their belief that the seismicity is a consequence of the collapse of the cavern, and not the cause of the collapse of the cavern and the formation of the sinkhole
  - Following recent reports of seismic activity on the western side of the Napoleonville Salt Dome, the Office of Conservation asked Dr. Gary Hecox with Shaw Environmental and Infrastructure to evaluate the readings from the USGS monitoring equipment. Below is Dr. Hecox's analysis:
    - On Tuesday October 23, 2012 at 9:06 PM a short duration, pronounced seismic event was recorded at the site. The Center for Earthquake Research and Information (CERI) was able to determine that this event occurred at a depth of approximately 500 meters (1,600 feet). Shaw has reviewed the data from the cavern pressure monitoring system and sinkhole bubble activity. The seismic event did not have any discernible effect on cavern pressure or sinkhole bubble activity. No new bubble sites have been observed since this event occurred and activity at existing bubble sites has not visibly changed.

As of 5 November 2012

Assumption Parish
Scientific Situation Summary

- Scientific Workgroup theories of cause:
  - Salt Dome moving – natural migration of gas
  - Failed cement casing in OXY #3 well
  - Cavity Failure
  - Salt / Caprock falling from top of the cavern
    - Natural
    - Man-made (including penetration into sediments by cavern)
  - Gas storage cavern connections, communications by fractures
  - Low permeability seepage of gas into OXY #3 (source unknown)
  - Regional Tectonic activity (movement on growth faults)
  - A combination of above events

As of 5 November 2012

Next Operational Period (5-8 Nov 2012) Incident Action Plan

- DNR :
  - Texas Brine conducting test of investigatory well in accordance with order
  - Perform oversight of operations at investigatory well, observation/vent well and sink hole (day light hours)
  - Staff on standby to assist Assumption Parish Incident Commander with monitoring of bubble sites and other duties
  - Reviewing analysis of water samples from water wells screened in Mississippi River Alluvial aquifer
  - Continue source investigation and file reviews
  - Coordinate and provide information to science team
  - Dome operators proceeding to implement their Shallow Geology, Aquifer, and Caprock Characterization Plan
  - Shaw E&I and Texas Brine will split samples of surface water from sink hole and industrial wells.
  - Refining aquifer map and obtaining access agreements from potential vent well sites
  - Shaw E&I's contractor installing an observation/vent well (ORW-4) on the south side of Hwy 70.
  - Shaw E&I to collect pressure readings from the shallow water Geoprobes
  - Efforts are underway to finalize contracts to remove material from inside the casing at the ORW-4 location in an attempt to vent the well.

As of 5 November 2012

Next Operational Period (5-8 Nov 2012) Incident Action Plan

- DHH / Office of Public Health
  - DHH will continue to review and analyze environmental sample data as provided by the Louisiana Department of Environmental Quality (LDEQ), for any chemical findings that would indicate a potential public health risk.
  - DHH Safe Drinking Water Program will continue to monitor the incident for any reports of the expansion of the slurry/hole to ensure that water distribution underground piping is not compromised.

As of 7 November 2012

Next Operational Period (5-8 Nov 2012) Incident Action Plan

- DHH / Office of Public Health:
  - DHH/OPH will continue to participate in meetings with GOHSEP and Assumption Parish to maintain visibility and operational readiness for any potential public health concerns.

As of 5 November 2012

Next Operational Period (5-8 Nov 2012) Incident Action Plan

- DEQ:
  - Continue to conduct air and water monitoring in the community and in the area of the bubbling in Bayou Corne, Triche Canal, and Grand Bayou
  - Continue to offer indoor air monitoring to residents who complete the Right of Entry form from the Parish. Residents desiring indoor home monitoring may call DEQ @ (225) 219-3015
  - Pursant to the DNR press release dated 11/7/2012 regarding the pressure in some geoprobes, LDEQ will conduct indoor air monitoring as requested at residential homes in the Bayou Corne community.
  - Conduct any test required by scientific group to aid in source/cause identification
  - Provide oversight of Texas Brine's efforts to conduct hydrocarbon removal at the slurry site. DEQ is requesting written plan from Texas Brine with timeline for removal operations.
  - Provide oversight and review of Texas Brine's air and water quality monitoring efforts.
  - Continue to visually monitor conditions of the booms and general conditions of the slurry area from the well pad.
  - Conducting water quality monitoring at bubbling sites
  - DEQ Command Post on site. MAML collecting continuous air data for methane/non-methane VOCs and H2S. Canister samples will be collected opportunistically.

As of 7 November 2012

Next Operational Period (5-8 Nov 2012) Incident Action Plan

- Scientific Group:
  - Analyzing groundwater sample analyses
  - Evaluate issues as they arise
  - Continue to provide information to the UCG
  - Anyone can submit information at any time for science team evaluation by sending an email to askgohsep@la.gov
  - Additional members added to the team as needed

As of 5 November 2012

Assumption Parish
Long Range Plan

- DNR:
  - Conducting testing of investigatory well to determine cavern condition and root cause
  - Scientific Group conference calls/meetings will be scheduled weekly to review new data and issues that arise
  - Continue source investigation and file review
  - Evaluate results of monitoring data and take necessary action
  - Monitor operations at investigatory, observation/vent well and sink hole (day light hours)
  - Staff on standby to assist incident commander
  - Ensure total remediation of the entire site
  - Continue to pursue landowner access agreements
  - Implement Shaw E&I's Plan of Action
    - Install observation/vent wells as necessary
    - Install geoprobe observation wells as necessary
    - Conduct industrial well sampling bi-weekly and bubble sites as reported in general vicinity of operations.
  - Dome operators to identify presence of natural gas and vent as necessary
  - Ensure Texas Brine fully complies with the Commissioner of Conservation's Order dated 11 Oct 2012

- DEQ:
  - Continue to conduct sampling on air and water in area of operation
  - Total remediation of the entire site
  - Continue to conduct hazard assessment monitoring with APSD in resident homes and properties when requested.

As of 5 November 2012